

NPDES Permit No. IL0078450
Notice No. MEL:15012101.docx

Public Notice Beginning Date: **March 12, 2015**

Public Notice Ending Date: **April 13, 2015**

National Pollutant Discharge Elimination System (NPDES)
Permit Program

Draft Modified NPDES Permit to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois Environmental Protection Agency
Bureau of Water,
Division of Water Pollution Control
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-0610

Name and Address of Discharger:

Marquis Energy, LLC
11953 Prairie Industrial Parkway
Hennepin, Illinois 61327

Name and Address of Facility:

Marquis Energy, LLC
11953 Prairie Industrial Parkway
Hennepin, Illinois 61327
(Putnam County)

The Illinois Environmental Protection Agency (IEPA) has made a tentative determination to issue a NPDES permit to discharge into the waters of the state and has prepared a draft permit and associated fact sheet for the above named discharger. The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice/Fact Sheet. The last day comments will be received will be on the Public Notice period ending date unless a commentor demonstrating the need for additional time requests an extension to this comment period and the request is granted by the IEPA. Interested persons are invited to submit written comments on the draft permit to the IEPA at the above address. Commentors shall provide his or her name and address and the nature of the issues proposed to be raised and the evidence proposed to be presented with regards to those issues. Commentors may include a request for public hearing. Persons submitting comments and/or requests for public hearing shall also send a copy of such comments or requests to the permit applicant. The NPDES permit and notice number(s) must appear on each comment page.

The application, engineer's review notes including load limit calculations, Public Notice/Fact Sheet, draft permit, comments received, and other documents are available for inspection and may be copied at the IEPA between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

If written comments or requests indicate a significant degree of public interest in the draft permit, the permitting authority may, at its discretion, hold a public hearing. Public notice will be given 45 days before any public hearing. Response to comments will be provided when the final permit is issued. For further information, please call Mark E. Liska at 217/782-0610.

The applicant is engaged in the production of denatured ethanol via fermentation (SIC 2869). Waste water is generated from water treatment wastes and cooling tower blowdown. No process water is discharged. Plant operation results in an average discharge of 0.623 MGD of multimedia filter backwash, cooling tower blowdown, water softener regeneration wastewater, and reverse osmosis concentrate from outfall 001. The site has been graded to convey stormwater runoff into culverts where it is discharged to a evaporation/percolation pond.

Modification: The plant will undergo an expansion which will double the production of ethanol. The DAF will increase from 0.350 MGD to 0.623 MGD. There are no new discharges.

Application is made for existing discharge which is located in Putnam County, Illinois. The following information identifies the discharge point, receiving stream and stream classifications:

Outfall	Receiving Stream	Latitude		Longitude		Stream Classification	Biological Stream Characterization
001	Illinois River	41° 16' 35"	North	89° 19' 24"	West	General Use	Not Rated

To assist you further in identifying the location of the discharge please see the attached map.

The stream segment D-16 receiving the discharge from outfall(s) 001 is on the draft 2014 Illinois Integrated Water Quality Report and Section 303(d) List. The receiving water has not been given an integrity rating or been listed as biologically significant in the 2008 Illinois Department of Natural Resources publication *Integrating Multiple Taxa in a Biological Stream Rating System*. The impaired designated uses and pollutants causing impairment are tabulated below:

<u>Designated Uses</u>	<u>Pollutants Causing Impairment</u>
Fish Consumption	Mercury, PCBs

The discharge(s) from the facility shall be monitored and limited at all times as follows:

Outfall: 001 Multimedia Filter Backwash, Cooling Tower Blowdown, Water Softener Regeneration Wastewater, and Reverse Osmosis Concentrate (DAF = 0.623 MGD)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		REGULATION	CONCENTRATION <u>LIMITS mg/l</u>		REGULATION
	30 DAY AVERAGE	DAILY MAXIMUM		30 DAY AVERAGE	DAILY MAXIMUM	
Flow (MGD)						35 IAC 309.146
pH				6.0-9.0		35 IAC 304.125
Temperature				Monitor Only		35 IAC 302.102
Total Suspended Solids				15	30	35 IAC 304.124
Total Residual Chlorine					0.05	40 CFR 125.3
Chlorides				Monitor Only		35 IAC 309.146
Iron				Monitor Only		35 IAC 309.146

The following explain the conditions of the proposed permit:

The special conditions clarify the following: Flow, pH, temperature, total residual chlorine, monitoring location, and DMR's.

Marquis Energy - Hennepin Antidegradation Assessment
NPDES Permit No. IL0078450 Putnam County

This facility manufactures ethanol from corn. They are requesting a modified NPDES permit to allow the discharge from an expanded manufacturing plant. The expansion will allow production to double. All of the current waste streams will increase proportionally in flow and these include the cooling tower blowdown, reverse osmosis (RO) reject water, ion exchange softener backwash water and multimedia filter backwash water. No process wastewaters exist due to recycling within the plant. The average flow of the plant will increase from 0.35 MGD to 0.623 MGD. Additionally, the facility requests permission to discharge a one-time only wastewater from the passivation of the new portion of the cooling tower. The antidegradation assessment conducted by the applicant is found in a document dated January 7, 2015 entitled Supplement #1 – Application for Permit Modification.

Identification and Characterization of the Affected Water Body.

The receiving water is the Illinois River (segment code D-16). The Illinois River at this location is a General Use water body with a 7Q10 flow of 3532 cfs. The Illinois River is listed as an impaired water in the draft 2014 Illinois Integrated Water Quality Report and Section 303(d) List for fish consumption use. The causes of impairment are given as mercury and PCBs. Aquatic life use is fully supported. The Illinois River is not listed as a Biologically Significant Stream nor is it given an integrity rating at this location in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*. The Illinois River at this location is not an enhanced water body pursuant to the dissolved oxygen water quality standard.

Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.

Since the facility is doubling production, constituents in the wastewater will approximately double in loading. There are no constituents that approach the concentration of water quality standards in the effluent. The applicant has performed scans of the combined effluent for metals and other constituents. Concerns about metals loading from the treated lumber cooling tower have been proven to be unfounded as the metals concentrations in the discharged effluent are very low. A table of constituent loading has been provided that gives the current loading in pounds per day and the predicted loading once the expansion is complete. As expected, the loads approximately double. The sources of the constituents that comprise this loading are the very minor leaching of metals from the treated wood in the cooling towers, water softeners, well water used for plant function other than process wastewater, and the chemical additives used to maintain the cooling tower, water softener and reverse osmosis units. No new chemical additives are currently proposed for daily use and the applied concentrations of the previously approved GE Betz additives will not increase. Given that the discharged concentration of each product is expected to be similar to that previously approved, product residuals in facility effluent under normal operating conditions will continue to be nontoxic to aquatic life. However, for phosphorus-based additives used in the cooling towers and RO units, the loading of phosphorus into the receiving water will increase due to the increased volume of water being discharged from the plant. Existing daily phosphorus loading from the entire facility is 2.4 pounds per day and loading after expansion is 4.41 pounds per day.

Due to the installation of the new cooling tower, the facility will also undergo a one-time cooling tower pre-cleaning and passivation procedure which will require the slug usage of products that have not previously been approved for use at these concentrations. The two-step pre-cleaning and passivation procedure will occur over the course of approximately 6.5 days. During each procedure, cooling tower blowdown will be locked in and then bled out at 200 GPM into the central discharge line of the existing plant, thereby diluting the waste stream with 243 GPM of flow prior to outfall. The pre-cleaning and passivation event will result in a slug discharge of wastewater that will contain approximately 45 pounds per day of phosphorus during the 6.5 day discharge event. A review of the products to be used during this procedure is provided below.

Gengard GN7004: The product is a dispersant composed of proprietary nonhazardous ingredients that will be applied into the cooling tower basin at 268 ppm during both cleaning phases. Product residuals will be discharged at a maximum of 121 ppm from Outfall 001, a concentration that will be nontoxic based on product toxicity estimates (48 hour *Ceriodaphnia* LC50 = 1707.6 ppm).

Gengard GN7210: The product is a phosphorus based corrosion inhibitor that will be applied into the cooling tower basin at 252 ppm during the passivation phase (not used during pre-cleaning phase). Product residuals will be discharged at a maximum of 114 ppm from Outfall 001, a concentration that will be nontoxic based on product toxicity estimates (96 hour fathead minnow LC50 = 354 ppm).

Flogard MS6201: The product is a phosphorus based corrosion inhibitor that will be applied into the cooling tower basin at 205 ppm during the pre-cleaning phase (not used during passivation phase). Product residuals will be discharged at a maximum of 92.5 ppm from Outfall 001, a concentration that will be nontoxic based on product toxicity estimates (48 hour *Daphnia magna* LC50 = 660 ppm).

Inhibitor AZ8104: The product is a copper corrosion inhibitor composed of tolyltriazoles (chloro, dichloro, benzo) and sodium hydroxide that was initially proposed to be applied into the cooling tower basin at 200 ppm during the pre-cleaning phase and 134 ppm during the passivation phase. However, due to Agency concerns regarding the potential of product residuals to cause toxicity to aquatic life upon outfall, the water treatment contractor has adjusted the application rate to alleviate Agency concerns. The product will now be applied into the cooling tower basin at 67 ppm during the pre-cleaning and passivation steps. Product residuals will be discharged at a maximum of 30 ppm from Outfall 001 using worst case estimates (no internal degradation or binding to the cooling tower), a concentration that will not be acutely toxic based on product toxicity estimates (96 hour pH adjusted fathead minnow LC50 = 50.7 ppm).

Spectrus BD1500: The product is a biodispersant composed of an alkylene oxide block polymer (non-ionic surfactant) that will be applied into the cooling tower basin at 30 ppm during the pre-cleaning phase and 31 ppm during the passivation phase. Product residuals will be discharged at a maximum of 14 ppm from Outfall 001, a concentration that will be nontoxic based on product toxicity estimates (7 day fathead minnow LC50 = >3,000 ppm).

The small increases in loading of groundwater minerals, small increases in daily phosphorus discharges, and temporary increases in pollutant loadings due to pre-cleaning and passivation additives are not expected to adversely impact the uses of the receiving water.

Fate and Effect of Parameters Proposed for Increased Loading.

The groundwater minerals discharged will not alter the character of the receiving stream. Phosphorus loading has been minimized to the extent possible and will not cause local impacts such as algae blooms. Effluent discharged from the pre-cleaning and passivation of the new cooling tower will be nontoxic to aquatic life upon outfall. No adverse overall impact to the receiving stream will occur.

Purpose and Anticipated Benefits of the Proposed Activity.

The discharge of the expanded effluent to surface waters allows the company to expand the plant and continue to be in a competitive business position. This will allow the company to add 32 permanent jobs to its workforce in addition to supplying many temporary construction jobs. The expanded plant will be an even greater economic force for the community, buying even more corn from local farmers and supplies/services from local companies.

Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.

The facility reviewed the discharge options that it considered approximately six years ago when the plant was first constructed. Discharge to a POTW (Hennepin STP) is still not a viable alternative to discharge to the Illinois River. The Hennepin STP is still the closest POTW but remains unable to accept the cooling water blowdown and other very low BOD wastewaters from the plant. Further re-use of wastewater within the plant is not possible given plant design.

The new portion of the cooling tower is to be built in the same manner as the existing tower. The treated wood had been shown to not leach metals at rates that create concentrations in the effluent of concern. The design of the new portion of the cooling tower is therefore both efficient from the plant's perspective and not harmful to the environment.

The zero liquid discharge option (ZLD) remains impractical both in initial cost and in operation given the high energy cost involved. This method involved drying the effluents and disposing of the crystalized minerals.

Much of the effort in evaluating the original plant for discharge alternatives involved phosphorus as used to treat plant pipes to prevent corrosion. The facility recently queried its treatment chemical supplier (GE Water & Process Technologies) to see if a zero or low phosphorus alternative exists for the passivation process or routine plant treatment. GE reported that the industry standard for cooling tower and reverse osmosis corrosion protection and antiscalants remain the same phosphorus-containing products that Marquis now uses. They add that non phosphorus alternatives are in research and development stages at their company and continue to be unproven in all industrial applications. GE will present new technologies to Marquis as they become available.

The facility also found that phosphorus removal using ultrafiltration continues to be impractical given the dissolved nature of phosphorus in the effluent. Biological phosphorus removal also remains impractical given that very little organic material exists in the wastewater making the microbial activity necessary for biological phosphorus removal impractical.

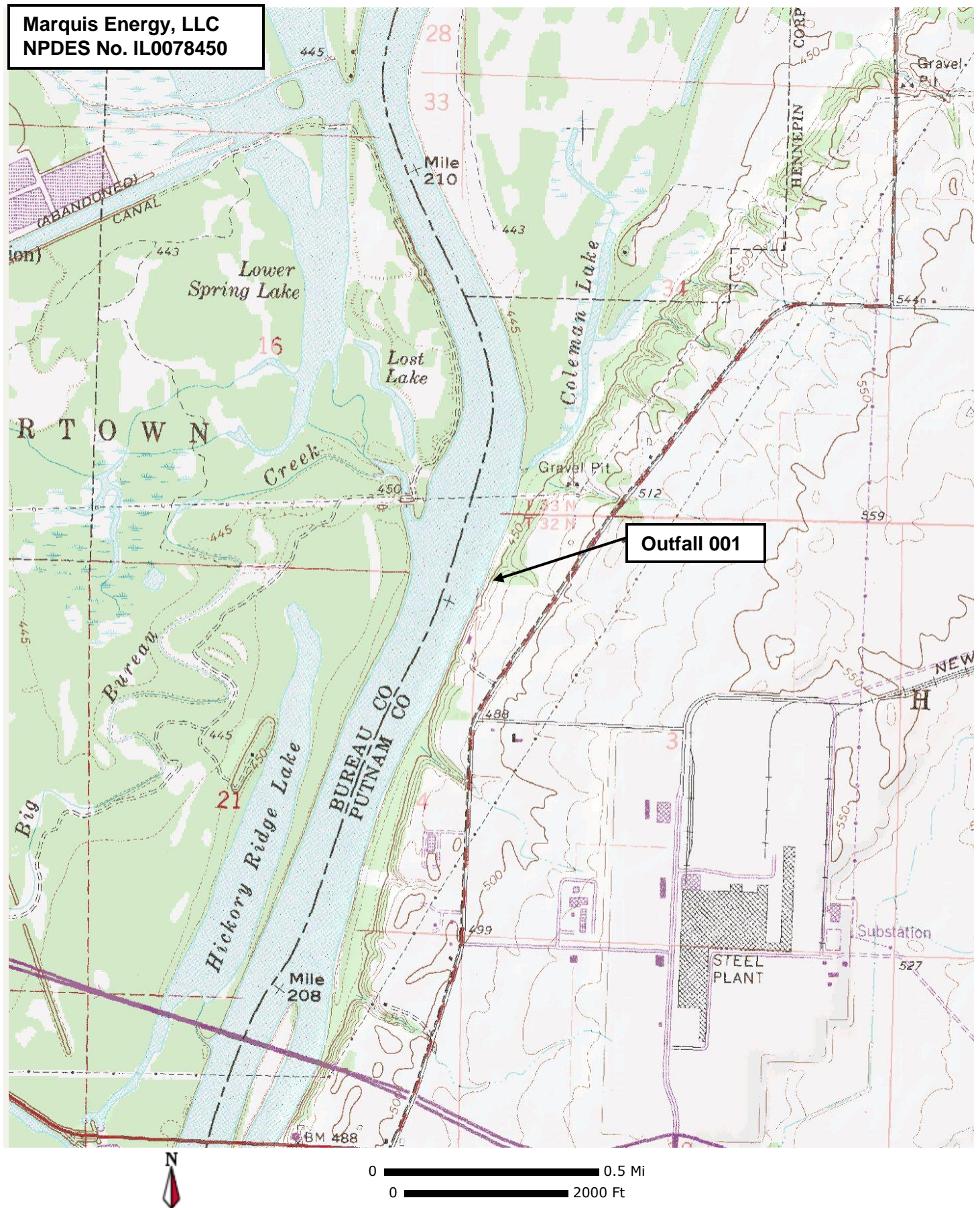
Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities

An Eco-CAT endangered species consultation submitted on December 30, 2014 to the Illinois Department of Natural Resources resulted in the determination that ab INAI site, the Hennepin Illinois River Floodplain INAI Site exists in the area. A letter dated December 31, 2014 was received from IDNR that concluded that adverse effects are unlikely from the expansion activity and that consultation has been terminated.

Agency Conclusion.

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time the draft permit was written. We tentatively find that the proposed activity will result in the attainment of water quality standards; that all existing uses of the receiving stream will be maintained; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity will benefit the community by allowing the facility to remain competitive and preserve jobs. Comments received during the NPDES permit public notice period will be evaluated before a final decision is made by the Agency.

Marquis Energy, LLC
NPDES No. IL0078450



NPDES Permit No. IL0078450

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Modified (NPDES) Permit

Expiration Date: August 31, 2019

Issue Date: September 12, 2014

Effective Date: September 12, 2014

Modification Date:

Name and Address of Permittee:

Marquis Energy, LLC
11953 Prairie Industrial Parkway
Hennepin, Illinois 61327

Facility Name and Address:

Marquis Energy, LLC
11953 Prairie Industrial Parkway
Hennepin, Illinois 61327
(Putnam County)

Discharge Number and Name:

001 Multimedia Filter Backwash, Cooling Tower Blowdown,
Water Softener Regeneration Wastewater, and Reverse
Osmosis Concentrate

Receiving Waters:

Illinois River

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

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NPDES Permit No. IL0078450

Effluent Limitations and Monitoring

1. From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall 001 Multimedia Filter Backwash, Cooling Tower Blowdown, Water Softener Regeneration Wastewater and Reverse Osmosis Concentrate (DAF = 0.623 MGD)

PARAMETER	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				1/Month	
pH	See Special Condition 2				1/Month	Grab
Temperature	See Special Condition 3				1/Month	Single Reading
Total Suspended Solids			15	30	1/Month	Grab
Total Residual Chlorine	See Special Condition 7			0.05	1/Month	Grab
Chlorides*				Monitor Only	1/Year	Grab
Iron				Monitor Only	1/Month	Grab

*The Permittee shall monitor for chlorides in the month of June and report it on the July DMR.

Special Conditions

SPECIAL CONDITION 1. Flow shall be measured in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum value on the monthly Discharge Monitoring Report.

SPECIAL CONDITION 2. The pH shall be in the range 6.0 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. This facility meets the allowed mixing criteria for thermal discharges pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to exceed thermal water quality standards. This determination is based on a design average flow of 0.35 MGD and a maximum effluent temperature 90°F. The permittee shall monitor the flow and temperature of the discharge prior to entry into the receiving water body. Monitoring results shall be reported on the monthly Discharge Monitoring Report. This permit may be modified to include formal temperature limitations should the results of the monitoring show that there is a reasonable potential to exceed a thermal water quality standard. Modification of this permit shall follow public notice and opportunity for comment.

SPECIAL CONDITION 4. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 5. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (NetDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the NetDMR program, can be obtained on the IEPA website, <http://www.epa.state.il.us/water/net-dmr/index.html>.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

Permittees not using NetDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 6. For the purpose of this permit, the discharge from outfall 001 is limited to multimedia filter backwash, cooling tower blowdown, water softener regeneration wastewater, and reverse osmosis concentrate, free from process and other wastewater discharges. In the event that the permittee shall require the use of water treatment additives other than those previously approved of, the permittee must request a change in this permit in accordance with the Standard Conditions – Attachment H.

SPECIAL CONDITION 7. All samples for total residual chlorine (TRC) shall be analyzed by an applicable method contained in 40 CFR 136, equivalent in accuracy to low-level amperometric titration. Any analytical variability of the method used shall be considered when determining the accuracy and precision of the results obtained.

SPECIAL CONDITION 8. The use or operation of this facility shall be by or under the supervision of a Certified Class K operator.

SPECIAL CONDITION 9. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.